



## DEFENSE INFORMATION SYSTEMS AGENCY

P. O. BOX 549  
FORT MEADE, MARYLAND 20755-0549

IN REPLY  
REFER TO: Joint Interoperability Test Command (JTE)

**21 Nov 12**

**SUBJECT:** Extension of the Special Interoperability Test Certification of the Cisco Catalyst 3750X Series Switch Release 15.0(1)SE1, with update of Cisco IOS Release 15.0(1)SE1 to 15.0(1)SE2

- References:
- (a) Department of Defense Directive 4630.05, "Interoperability and Supportability of Information Technology (IT) and National Security Systems (NSS)," 5 May 2004.
  - (b) Chairman, Joint Chiefs of Staff Instruction 6212.01E, "Interoperability and Supportability of Information Technology and National Security Systems," 15 December 2008.
  - (c) through (e), see Enclosure 1.

1. References (a) and (b) establish the Defense Information Systems Agency (DISA), Joint Interoperability Test Command (JITC), as the responsible organization for interoperability (IO) test certification.

2. The Cisco WS-C3750X-24S, WS-C3750X-12S, and WS-C3750X-48P switches with release 15.0(1)SE1 are hereinafter referred to as the system under test (SUT). The SUT meets all of its critical IO requirements and is certified for joint use within the Defense Information System Network (DISN) as an Assured Services Local Area Network (ASLAN) Core, Distribution, and Layer 2/Layer 3 Access switch. The SUT was tested in a stacked configuration with three switches. Each component of the SUT supports 12, 24 or 48 users, and can be used in a stacked configuration of up to 9 devices to support up to 432 users. The SUT is certified as interoperable for joint use with other ASLAN components listed on the Unified Capabilities (UC) Approved Products List (APL) with the following interfaces: 10/100/1000BaseT and 1000BaseX for access, 1000/10000BaseX for uplink. All of these interfaces were tested with the exception of the 10BaseT interface. JITC analysis determined that the 10BaseT interface is a low risk for certification based on the vendor's Letter of Compliance (LoC) to comply with the Institute of Electrical and Electronics Engineers (IEEE) 802.3i standard and the testing data collected at all other data rates. The SUT meets the critical IO requirements set forth in Reference (c), using test procedures derived from Reference (d). The Cisco WS-C3750X-24P, WS-C3750X-48PF, WS-C3750X-48T, and WS-C3750X-24T switches employ the same software and similar hardware as the SUT. JITC analysis determined these systems to be functionally identical to the SUT for IO certification purposes, and they are also certified for joint use.

The SUT is certified to support Assured Services within an ASLAN. If a component meets the minimum requirements for deployment in an ASLAN, it also meets the lesser requirements for deployment in a non-ASLAN. Non-ASLANs are "commercial grade" and provide support to Command and Control (C2) (ROUTINE only calls) (C2(R)) or non-C2 voice subscribers. When deployed in a non-ASLAN, the SUT may also be used to receive all levels of precedence, but is limited to supporting calls that are originated at ROUTINE precedence only. Non-ASLANs do

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not meet the availability or redundancy requirements for C2 or Special C2 users and; therefore, are not authorized to support precedence calls originated above ROUTINE.

Testing of the SUT did not include video services or data applications; however, simulated video traffic, preferred data, and best effort data were generated during testing to determine the SUT's ability to prioritize and properly queue voice media and signaling traffic. No other configurations, features, or functions, except those cited within this document, are certified by JITC. This certification expires upon changes that affect IO but no later than three years from the date of the UC APL memorandum.

3. The extension of this certification is based upon Desktop Review (DTR) 1. The original certification is based on IO testing conducted by the United States Army Information Systems Engineering Command, Technology Integration Center (USAISEC TIC), review of the vendor's LoC, DISA adjudication of open Test Discrepancy Reports (TDRs), and the DISA Certifying Authority (CA) Recommendation. The IO testing was conducted by the USAISEC TIC, Fort Huachuca, Arizona, from 13 February through 16 March 2012. Review of the vendor's LoC was completed on 8 May 2012. DISA's adjudication of outstanding TDRs was completed on 10 July 2012. The DISA CA provided a positive recommendation on 8 June 2012, based on the security testing completed by USAISEC TIC-led information assurance (IA) test teams. Those test results are published in a separate report, Reference (e). This DTR was requested to update Cisco IOS Release 15.0(1)SE1 to 15.0(1)SE2, which fixes a version mismatch error when network module C3KX-SM-10G is installed and booted with Cisco IOS release 15.0(1)SE1. JITC determined there was minor risk in approving this DTR without interoperability testing because the update of this IOS has no impact on the IA security posture, and does not change the interoperability results. The IA posture has not changed; therefore, the original IA approval applies to this DTG. Therefore, JITC approves this DTR.

4. Table 1 provides a UC APL product summary. Table 2 provides the SUT interface IO status and Table 3 provides the Capability Requirements (CRs) and Functional Requirements (FRs) status. The threshold CRs/FRs for ASLAN components are established by Section 5.3.a of Reference (c) and were used to evaluate the IO of the SUT. Enclosure 3 provides a detailed list of the interface, capability, and functional requirements.

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**Table 1. UC APL Product Summary**

Component (See note.)	Release	Sub-Component (See note.)	Certification Applicability																						
			Core	Distribution	Access																				
<b><u>WS-C3750X-24S</u></b>	IOS 15.0(1)SE2	<b><u>C3KX-NM-10G</u></b> , <b><u>C3KX-SM-10G</u></b> , C3KX-NM-10GT	Yes (Stackable)	Yes (Stackable)	L2/L3 (Stackable)																				
<b><u>WS-C3750X-12S</u></b>		The following module was certified during previous ASLAN certifications and recertified based on technology maturity per UCR 2008, Change 3, Section 4.4.2:																							
<b><u>WS-C3750X-48P</u></b>		C3KX-NM-1G																							
<b><u>WS-C3750X-24P</u></b>																									
<b><u>WS-C3750X-48PF</u></b>																									
<b><u>WS-C3750X-48T</u></b>																									
<b><u>WS-C3750X-24T</u></b>																									
<p><b>NOTE:</b> Components bolded and underlined were tested by the USAISEC TIC. The other components in the family series were not tested; however, they utilize the same software and similar hardware. JITC analysis determined them to be functionally identical for IO certification purposes and they are also certified for joint use.</p> <p><b>LEGEND:</b></p> <table> <tr> <td>APL</td> <td>Approved Products List</td> <td>N/A</td> <td>Not Applicable</td> </tr> <tr> <td>IO</td> <td>Interoperability</td> <td>TIC</td> <td>Technology Integration Center</td> </tr> <tr> <td>IOS</td> <td>Internetworking Operating System</td> <td>UC</td> <td>Unified Capabilities</td> </tr> <tr> <td>JITC</td> <td>Joint Interoperability Test Command</td> <td>USAISEC</td> <td>U.S. Army Information Systems Engineering Command</td> </tr> <tr> <td>L2/L3</td> <td>Layer 2/Layer 3</td> <td></td> <td></td> </tr> </table>						APL	Approved Products List	N/A	Not Applicable	IO	Interoperability	TIC	Technology Integration Center	IOS	Internetworking Operating System	UC	Unified Capabilities	JITC	Joint Interoperability Test Command	USAISEC	U.S. Army Information Systems Engineering Command	L2/L3	Layer 2/Layer 3		
APL	Approved Products List	N/A	Not Applicable																						
IO	Interoperability	TIC	Technology Integration Center																						
IOS	Internetworking Operating System	UC	Unified Capabilities																						
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L2/L3	Layer 2/Layer 3																								

**Table 2. SUT Interface Interoperability Status**

Interface	Applicability			UCR 2008, Change 3 Reference	Threshold CR/FR <sup>1</sup>	Status	Remarks
	Co	D	A				
Serial	C	C	C	5.3.1.3.9	1-4	Certified	The SUT met the CRs and FRs with the following standard: EIA-232.
10Base-X	C	C	C <sup>2</sup>	5.3.1.3.1	1-6	Certified <sup>3</sup>	The SUT met CRs and FRs with the following IEEE standard: 802.3i (10BaseT).
100Base-X	R	R	C <sup>2</sup>	5.3.1.3.1	1-6	Certified	The SUT met CRs and FRs with the following IEEE standard: 802.3u (100BaseT).
1000Base-X	R	R	C <sup>2</sup>	5.3.1.3.1	1-6	Certified	The SUT met CR and FRs with the following IEEE standards: 802.3ab (1000BaseT), 802.3z (1000Base-SX, 1000Base-LX).
10000Base-X	C	C	C	5.3.1.3.1	1-6	Certified	The SUT met CRs and FRs with the following IEEE standard: 802.3ae (10GBase-SR, 10GBase-LR).
802.11a	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported <sup>4</sup>	N/A
802.11b	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported <sup>4</sup>	N/A
802.11g	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported <sup>4</sup>	N/A
802.11n	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported <sup>4</sup>	N/A
802.16	C	C	C	5.3.1.3.1/5.3.1.7.2	1-6	Not Supported <sup>4</sup>	N/A

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**Table 2. SUT Interface Interoperability Status (continued)**

<b>NOTES:</b>				
1. The SUT high-level CR and FR ID numbers depicted in the Threshold CRs/FRs column can be cross-referenced in Table 3. These high-level CR/FR requirements refer to a detailed list of requirements provided in Enclosure 3.				
2. Core and Distribution products must minimally support 100Base-X (802.3u) and 1000Base-X (802.3z). Access products must minimally support one of the following standards: 802.3i (10BaseT), 802.3j (10BaseF), 802.3u (100BaseT/F), 802.3z (1000BaseF), or 802.3ab (1000BaseT). Other rates and standards may be provided as conditional interfaces.				
3. The USAISEC TIC tested all these interfaces with the exception of the 10BaseT interface. JITC analysis determined that the 10BaseT interface is a low risk for certification based on the vendor's LoC to the IEEE 802.3i and the testing data collected at all other data rates.				
4. The SUT does not support this interface. This interface is not required for a Core, Distribution, or Access switch.				
<b>LEGEND:</b>				
802.3ab	1000BaseT Gbps Ethernet Over Twisted Pair at 1Gbps (125 Mbps)	A	Access	
		C	Conditional	
802.3ae	10 Gbps Ethernet	Co	Core	
802.3i	10BaseT Mbps Over Twisted Pair	CR	Capability Requirement	
802.3j	10 Mbps Over Fiber	D	Distribution	
802.3u	Standard for Carrier Sense Multiple Access with Collision Detection at 100 Mbps	EIA	Electronic Industries Alliance	
		EIA-232	Standard for Defining the Mechanical and Electrical Characteristics for Connecting Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE)	
802.3z	Gigabit Ethernet Standard			
802.11/16	IEEE Wireless Standards			
10BaseF	10 Mbps Ethernet Over Fiber			
10BaseT	10 Mbps (Baseband Operation, Twisted Pair) Ethernet	FR	Functional Requirement	
		Gbps	Gigabits Per Second	
10Base-X	10 Mbps Ethernet Over Fiber or Copper	ID	Identification	
100BaseF	100 Mbps Ethernet Over Fiber	IEEE	Institute of Electrical and Electronics Engineers	
100BaseT	100 Mbps (Baseband Operation, Twisted Pair) Ethernet	JITC	Joint Interoperability Test Command	
		LoC	Letter of Compliance	
100Base-X	100 Mbps Ethernet Over Fiber or Copper	LR	Long Range Optics	
1000BaseF	1000 Mbps Ethernet Over Fiber	LX	Single-Mode Fiber Optics	
1000Base-LX	1000 Mbps Ethernet Over Fiber	Mbps	Megabits Per Second	
1000Base-SX	1000 Mbps Ethernet Over Fiber	N/A	Not Applicable	
1000BaseT	1000 Mbps (Baseband Operation, Twisted Pair) Ethernet	R	Required	
		SR	Short Range Optics	
1000Base-X	1000 Mbps Ethernet Over Fiber or Copper	SX	Multi-Mode Fiber Optics	
10000Base-X	10000 Mbps Ethernet Over Fiber or Copper	SUT	System Under Test	
10GBase-LR	10000 Mbps Ethernet Over Fiber	TIC	Technology Integration Center	
10GBase-SR	10000 Mbps Ethernet Over Fiber	UCR	Unified Capabilities Requirements	
		USAISEC	U.S. Army Information Systems Engineering Command	

**Table 3. SUT CRs and FRs Status**

CR/FR ID	Capability/Function	Applicability <sup>1</sup>	UCR 2008, Change 3 Reference	Status	Remarks
<b>1</b>	<b>General Performance Parameters</b>				
	Performance Parameters	Required	5.3.1.3	Met	
	Port Interface Rates	Required	5.3.1.3.1	Met	
	Port Parameter Requirements	Required	5.3.1.3.2	Met	
	Class of Service Markings	Required	5.3.1.3.3	Met	
	VLAN Capabilities	Required	5.3.1.3.4	Met	
	Protocols	Required	5.3.1.3.5	Partially Met <sup>2</sup>	
	QoS Features	Required	5.3.1.3.6	Met	
	Network Monitoring	Required	5.3.1.3.7	Met	
Security	Required	5.3.1.3.8	Met		

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**Table 3. SUT CRs and FRs Status (continued)**

2	<b>E2E Performance Requirements</b>				
	Voice Services	Required	5.3.1.4.1	Met <sup>3</sup>	
	Video Services	Required	5.3.1.4.2	Met <sup>3</sup>	
	Data Services	Required	5.3.1.4.3	Met <sup>3</sup>	
3	<b>NM Requirements</b>				
	Configuration Control	Required	5.3.1.6.1	Met	
	Operational Changes	Required	5.3.1.6.2	Met	
	Performance Monitoring	Required	5.3.1.6.3	Met	
	Alarms	Required	5.3.1.6.4	Met	
	Reporting	Required	5.3.1.6.5	Met	
4	<b>Engineering Requirements</b>				
	Physical Media	Required	5.3.1.7.1	Met <sup>4</sup>	
	Wireless	Conditional	5.3.1.7.2	Not Tested <sup>5</sup>	
	Traffic Engineering	Required	5.3.1.7.3	Met <sup>4</sup>	
	Availability	Required	5.3.1.7.6	Met <sup>4</sup>	
	Redundancy	Required	5.3.1.7.7	Met <sup>4</sup>	
5	<b>MPLS</b>				
	MPLS Requirements	Conditional	5.3.1.8.4.1	Not Tested <sup>5</sup>	
	MPLS VPN Augmentation to VLANs	Conditional	5.3.1.8.4.2	Not Tested <sup>5</sup>	
6	<b>IPv6 Requirements</b>				
	Product Requirements	Required	5.3.5.4	Partially Met <sup>6</sup>	

**NOTES:**

1. The annotation of 'Required' refers to a high-level requirement category. The applicability of each sub-requirement is provided in Enclosure 3. The SUT does not need to provide conditional requirements. However, if a capability is provided, it must function according to the specified requirements.
2. The SUT does not comply with the following Protocols RFCs: 2710, 3273, 3810, 4552, 4750, and 5798. DISA NS has accepted and approved the vendor's POA&M and adjudicated this discrepancy as minor. RFC 3273 has been determined by DISA to have negligible operational impact in DoD networks and the RFC applicability will change to "optional" in future UCR documents (e.g. UCR 2013). The RFC 4750 discrepancy was adjudicated by DISA as having a minor operational impact using the CISCO-OSPF-TRAP-MIB. The SUT has limitations in Network Management. It does not support the OSPF-TRAP-MIB as outlined in RFC 4750. This discrepancy has been determined by DISA to have negligible operational impact in DoD networks.
3. This requirement was verified and met using simulated voice, video, and data traffic in an operational emulated environment to meet E2E requirements. The SUT must be deployed IAW deployment guide and engineering guidelines in UCR 2008, Change 3, Section, 5.3.1.4.
4. This requirement was met with the following stipulations: It is the site's responsibility to configure the SUT in a manner which meets the engineering requirements listed in Section 11.2 d. of Enclosure 2, and that it does not create a single point of failure which could impact more than 96 C2 users.
5. Wireless and MPLS were not tested and are not certified for joint use. Wireless and MPLS are conditional and; therefore, not required for a Core, Distribution, or Access switch.
6. The SUT does not comply with the following IPv6 RFCs: 2710, 3810, 4552, and 5798. DISA NS has accepted and approved the vendor's POA&M and adjudicated this discrepancy as minor.

**LEGEND:**

C2	Command and Control	MPLS	Multiprotocol Label Switching
CR	Capability Requirement	NM	Network Management
DISA	Defense Information Systems Agency	OSPF	Open Shortest Path First
DoD	Department of Defense	POA&M	Plan of Action and Milestones
E2E	End-to-End	QoS	Quality of Service
FR	Functional Requirement	RFC	Request For Comment
IAW	In Accordance With	SUT	System Under Test
ID	Identification	UCR	Unified Capabilities Requirements
IOS	Internetworking Operating System	VLAN	Virtual Local Area Network
IPv6	Internet Protocol Version 6	VPN	Virtual Private Network
MIB	Management Information Base		

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5. In accordance with the Program Manager's request, no detailed test report was developed. JITC distributes IO information via the JITC Electronic Report Distribution (ERD) system, which uses Unclassified-But-Sensitive Internet Protocol Router Network (NIPRNet) e-mail. More comprehensive IO status information is available via the JITC System Tracking Program (STP), which is accessible by .mil/.gov users on the NIPRNet at <https://stp.fhu.disa.mil>. Test reports, lessons learned, and related testing documents and references are on the JITC Joint Interoperability Tool (JIT) NIPRNet at <http://jit.fhu.disa.mil>. Information related to DISN testing is on the Telecom Switched Services Interoperability (TSSI) website at <http://jitc.fhu.disa.mil/tssi>. All associated data is available on the DISA Unified Capability Coordination Office (UCCO) website located at <http://www.disa.mil/ucco/>. Due to the sensitivity of the information, the Information Assurance Accreditation Package (IAAP) that contains the approved configuration and deployment guide must be requested directly from U.S. Government civilian or uniformed military personnel at the UCCO; e-mail: [disa.meade.ns.list.unified-capabilities-certificaion-office@mail.mil](mailto:disa.meade.ns.list.unified-capabilities-certificaion-office@mail.mil).

6. The testing point of contact Mr. James Hatch, DSN 821-2860, commercial (520) 533-2860, or email to [james.d.hatch12.civ@mail.mil](mailto:james.d.hatch12.civ@mail.mil). The JITC point of contact is Ms. Anita Mananquil, DSN 879-5164, commercial (520) 538-5164, FAX DSN 879-4347, commercial (520) 538-4347, or e-mail to [anita.l.mananquil.civ@mail.mil](mailto:anita.l.mananquil.civ@mail.mil). JITC's mailing address is P.O. Box 12798, Fort Huachuca, AZ 85670-2798. The Tracking Number for the SUT is 1126903.

FOR THE COMMANDER:

3 Enclosures a/s

  
for BRADLEY A. CLARK  
Acting Chief  
Battlespace Communications Portfolio

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DOT&E, Net-Centric Systems and Naval Warfare

U.S. Coast Guard, CG-64

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Defense Information Systems Agency, TEMC

Office of Assistant Secretary of Defense (NII)/DoD CIO

U.S. Joint Forces Command, Net-Centric Integration, Communication, and Capabilities  
Division, J68

Defense Information Systems Agency, GS23

## **ADDITIONAL REFERENCES**

- (c) Office of the DoD Chief Information Officer, "Department of Defense Unified Capabilities Requirements 2008, Change 3," September 2011.
- (d) Joint Interoperability Test Command, "ASLAN Component Test Plan (UCTP)," February 2012.
- (e) USAISEC TIC, "Information Assurance (IA) Assessment of Cisco 3750X (Tracking Number 1126903)," 8 June 2012.